LARVAE QUALITY OF BLACKSPOT SEABREAM *(Pagellus bogaraveo)* FED ROTIFERS ENRICHED WITH MARINE MICROALGAE (T-ISO) PRODUCED IN TWO DIFFERENT SYSTEMS: BAGS AND PHOTOBIOREACTORS (PBRs).

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Introduction

Microalgae culture using the new PBRs systems has been achieved for several species, with optimal results on biomass production. This has optimized production in this vital area of larval production.
The objective of this research was to determine the quality of these microalgae produced in these new systems, specifically the species Isochrysis sp. (T-ISO) as enrichment of the live food (rotifers) for larval culture in early stages (first 20 days).

Material & methods

Six batches of of 700 blackspot seabream larvae each were fed during 20 days. These were born at the culture plant of the IEO in Vigo (NW Spain). All batches were fed rotifers. Three batches were fed rotifers enriched with T-ISO produced in bags (**B**) (400 L polypropilen bags), while the remaining three batches were fed rotifers enriched with T-ISO produced in PBRs (**P**) (acrylic columns with 0.25 m in diameter and 2 m high). Larvae, at concentrations of 7 larvae L^{-1} were fed twice a day. Rotifer concentration was of 8 rot.ml^{-1}. At the end of this period, larvae biometric determinations and biochemical composition was determined for the six batches in triplicates. Biochemical determinations of rotifers enriched with T-ISO cultured in the two systems were also made in duplicate.
Data normality was checked with the Kolmogorov-Smirnov tests. The homoscedasticity of variances was verified with de Leveneôs test. The Studenôs t-test was used to determine differences in rotifers an larval fatty acids composition and differences in larval growth during the feeding period with the two diferent models.

Results

There were no significant differences ($p>0.05$) in larvae growth, both in length (mm) or weight (mg dry weight) (Fig. 1).

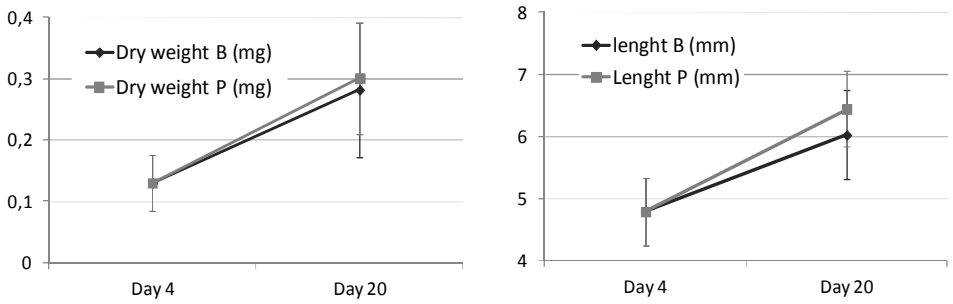

Figure 1. Average lenght (mm) and dry weight (mg) of blackspot seabream larvae fed rotifers enriched either with T-Iso cultures in bags or in PBRs, from the start of the experiment (day 4 age) until the end (day 20 age).

Similarly, there were no differences in larvae fatty acid composition fed microalgae from the two production systems. Contrary, rotifers fed T-Iso produced in the PBRs had higher ($p<0.05$) fatty acid %, particularly in the n-6 PUFA. There were no significant differences neither in total proteins nor in total lipids in rotifers and larvae fed both diets (table I).

	Rotifer			Larvae			
Fatty acids (%total)							
	T-Iso (B)	T-Iso (P)	Sig. Level	Day 4	Day 20 Rot (B)	Day 20 Rot (P)	Sig. Level (B-P)
PUFA´s	36,11±0,7593	40,87±0,4077	**p<0,05**	45,52	44,78±1,1844	44,06±0,3966	p>0,05
SAFA´s	27,50±0,8759	26,89±0,9717	p>0,05	27,65	35,28±1,4908	36,28±0,6285	p>0,05
MUFA´s	36,38±0,1166	32,23±0,5640	**p<0,05**	26,84	19,93±0,7826	19,66±0,6910	p>0,05
Σω3	24,97±0,8456	21,69±1,0534	**p<0,05**	38,21	30,62±1,2358	32,43±2,8636	p>0,05
Σω6	8,68±0,1285	17,26±0,5783	**p<0,05**	7,14	12,51±2,1561	9,55±2,7961	p>0,05
Total Lipid and Protein (%)							
Lipid	12,36±1,5513	11,68±2,0292	p>0,05	22,87	14,24±0,6790	13,76±0,4311	p>0,05
Protein	39,12±2,8949	38,32±4,3554	p>0,05	47,27	49,27±1,9562	50,86±2,8931	p>0,05

Table I ï Fatty acid content (%) in rotifers enriched with T-Iso produced either in bags (B) or PBRs (P), and from larval fed both diets and total lipid and protein (%).

Larval survival was 25.2±9.8585 in those fed rotifers enriched with T-ISO cultured in bags and 33.80±10.0837 % for those fed T-ISO enriched in PBRs.

Discussion and conclusions

Results indicate that the use T-ISO produced in the PBRs to enrich rotifers does not influence larvae quality, compared to using those enriched with microalgae produced with the traditional system (bags). The difference in rotifers fatty acid composition when fed microalgae enriched with the two different systems had no effect in larvae composition and assimilation.

References

Figueirido-Silva A.C., G. Corraze, P. Borges & L.M.P. Valente. 2009. Dietary protein/lipid level and protein source effects on growth, tissue composition and lipid metabolism of blackspot seabream (*Pagellus bogaraveo*). Aquaculture Nutrition nº 16, 2:173-187.